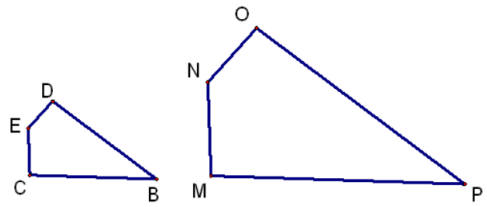
7-2 Similar Polygons

~ → similar

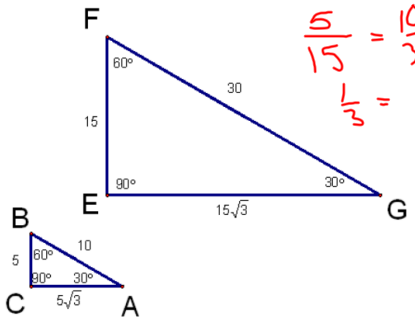
Two polygons are ~, if
1. corresponding ∠s are ≅
2. corresponding sides are proportional

The two figures are similar.



Write a similarity statement.

polygon CBDE ~ polygon MPON



$\frac{5}{15} = \frac{10}{30} = \frac{5\sqrt{3}}{15\sqrt{3}}$

$\frac{1}{3} = \frac{1}{3} = \frac{1}{3}$ ✓

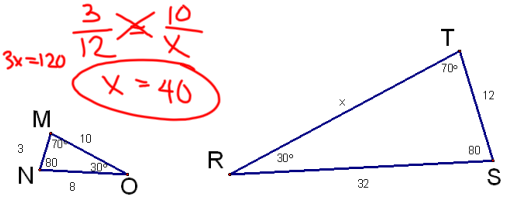
The two triangles are similar.

Scale factor--ratio of the corresponding sides

$\frac{3}{12} \times \frac{10}{x}$

$3x = 120$

$x = 40$

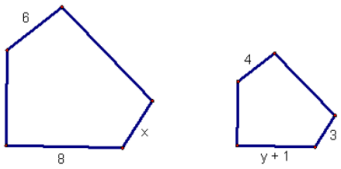


$\triangle MNO \sim \triangle TSR$

What is the scale factor?

$\frac{3}{12} = \frac{1}{4}$

The pentagons are similar.
Solve for x and y.



$\frac{8}{y+1} = \frac{x}{3} = \frac{6}{4}$

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$4(y+1) = 32$

$6y + 6 = 32$

$6y = 26$

$y = 4.3\overline{3}$

$4\frac{1}{3}$

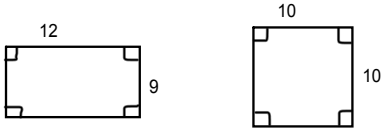
$\frac{x}{3} = \frac{6}{4}$

$4x = 18$

$x = 4.5$

Are the following figures similar?

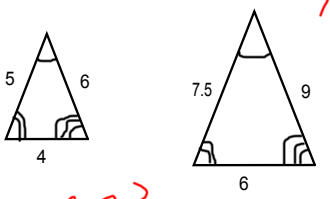
No



$\frac{12}{10} \stackrel{?}{=} \frac{9}{10}$

Are the following figures similar?

yes



$\frac{5}{7.5} = \frac{4}{6} = \frac{6}{9}$

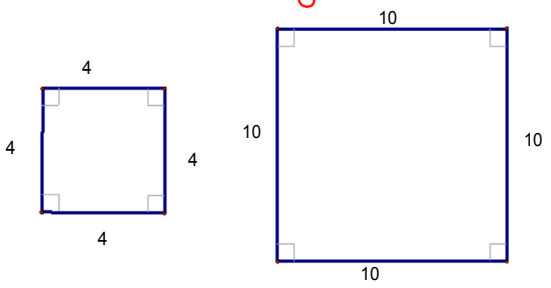
$.\overline{6} = .\overline{6} = .\overline{6}$

angles $\cong$? yes

sides prop? yes

Are the following figures similar?

yes



Theorem 7.1--Perimeters of Similar Polygons

If 2 polygons are similar, then the ratio of their perimeters is equal to the ratio of their corresponding side lengths.

ex:
$\Delta ABC \sim \Delta DEF$
The scale factor is 4:5.
The perimeter of ΔABC is 12cm.
What is the perimeter of ΔDEF?

$\frac{4}{5} = \frac{12}{x}$

$4x = 60$

$x = 15cm$

HW

p368-370
3-8, 10-14, 17-20